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MMR VACCINE AND THIMEROSAL-CONTAINING VACCINES ARE NOT ASSOCIATED WITH AUTISM, IOM REPORT SAYS

WASHINGTON — Based on a thorough review of clinical and epidemiological studies, neither the mercury-based vaccine preservative thimerosal nor the measles-mumps- rubella (MMR) vaccine are associated with autism, says a new report from the Institute of Medicine of the National Academies. Furthermore, the hypotheses regarding how the MMR vaccine and thimerosal could trigger autism lack supporting evidence and are theoretical only. Further research to find the cause of autism should be directed toward other lines of inquiry that are supported by current knowledge and evidence and offer more promise for providing an answer, said the committee that wrote the report.

"The overwhelming evidence from several well-designed studies indicates that childhood vaccines are not associated with autism," said committee chair Marie McCormick, Summer and Esther Feldberg Professor of Maternal and Child Health, Harvard School of Public Health, Boston. "Given that it is a devestating disorder, we strongly support ongoing research to discover the cause or causes of autism. Resources would be used most effectively if they were directed toward those avenues of inquiry that offer the greatest promise for answers. Without supporting evidence, the vaccine hypothesis does not hold such promise."

The report updates two earlier IOM reports, published in 2001, on possible links between autism and the MMR vaccine and thimerosal. At that time, the committee determined that the evidence did not show an association between the MMR vaccine and autism, but there was not enough evidence to determine whether thimerosal was associated with neurodevelopmental disorders such as autism. Given that mercury is known to have a toxic effect on the nervous system and that prenatal exposures to another form of mercury have been shown to adversely affect early childhood development, the committee concluded in 2001 that it was possible to hypothesize that thimerosal might trigger neurodevelopmental problems. The committee revisited these issues because several studies exploring the epidemiology and biological mechanisms of possible links between vaccines and autism have been undertaken during the past three years.

The committee based its latest conclusions and recommendations on a careful review of the literature it had assessed to develop its previous reports; subsequent studies; and other information provided by researchers, parents, and others. Epidemiological studies that looked at autism rates and exposures to vaccines carried the most weight in the committee's assessment of causality, but it considered other kinds of studies as well.

Five large epidemiological studies conducted in the United States, the United Kingdom, Denmark, and Sweden since 2001 consistently provided evidence that there is no association between thimerosal-containing vaccines and autism. Similarly, 14 large epidemiological studies consistently showed

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no association between the MMR vaccine and autism. The committee also reviewed five studies that reported links between thimerosal and autism and two that indicated a connection between the MMR vaccine and the disorder. However, limitations in how these studies were conducted and how the data were analyzed led the committee to conclude that they did not provide evidence supporting an association between vaccines and autism.

The committee also reviewed evidence related to possible biological mechanisms by which immunizations might trigger autism. For example, it has been hypothesized that the measles virus in the MMR vaccine might lodge in the intestines and trigger the release of toxins that lead to autism. Another hypothesis suggests that the MMR vaccine might stimulate the release of immune factors that damage the central nervous system, resulting in autism. It also has been suggested that thimerosal may interfere with biochemical systems in the brain, leading to the disorder.

However, no evidence has yet been found that the immune system plays a direct role in autism, the report notes. Furthermore, there is no evidence that activation of the immune system plays a direct role in causing autism. Autism also has never been documented as a consequence of exposure to high doses of mercury. While the committee agreed that the studies exploring these hypotheses raise interesting questions, they do not address the specifics of how autism could result. Therefore, evidence for any biological mechanism linking vaccines with autism can only be considered theoretical.

Autism is not a single condition, but rather a complex set of severe developmental disorders -- also referred to as autistic spectrum disorders -- characterized by sustained impairments in social interaction and communication abilities, as well as restricted or repetitive patterns of behaviors and interests. It is unclear how many cases of autism there are, but two reviews of published studies put the prevalence at one case for every 1,000 children. While some information suggests that autism rates may be rising, it is not clear whether the observed increase is real or due to factors such as heightened awareness of the disorder or the use of a broader diagnostic definition.

Thimerosal is an organic mercury compound that is still used as a preservative in some adult vaccines. It began to be removed from vaccines for children in 1999, and as of mid-2000, vaccines that are recommended for universal use in infants and young children are available in forms that have no or only trace amounts of thimerosal.

This study is the eighth and final in a series on vaccine safety sponsored by the Centers for Disease Control and Prevention and the National Institute of Allergy and Infectious Diseases. The Institute of Medicine is a private, nonprofit institution that provides health policy advice under a congressional charter granted to the National Academy of Sciences. A committee roster follows.

Pre-publication copies of ***Immunization Safety Review: Vaccines and Autism*** are available from the National Academies Press; tel. 202-334-3313 or 1-800-624-6242 or on the Internet at *http://www.nap.edu*. Reporters may obtain a copy from the Office of News and Public Information (contacts listed above).

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